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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

David G. Converse et al

Docket No.: C-2593

Serial No.: 10/717,089

Art Unit: 1745

Filed: November 19, 2003

Examiner: Cantelmo, Gregg

Title: Electric Storage Augmentation of Fuel
Cell System Transient Response

I hereby certify that this correspondence is being
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March 21, 2005

Barbara Cecere

Barbara CecereRESPONSE

Commissioner for Patents
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Sir:

This paper is a response to the Office Action dated March 1, 2005. Following a restriction requirement, claims 1-6 were elected with traverse. Claim 7 has been withdrawn from consideration.

1. Entry of the Preliminary Amendment is noted with gratitude.

2,3. Election was required between species I, with a storage device connected between the fuel cell stack output lines, covered in claims 1-3 and 7 and species II wherein a storage device is connected in series with a DC/DC converter between the fuel cell stack power output lines, as set forth in claims 1-6.

Applicants have provisionally elected species II, claims 1-6, under traverse.

The issue here is not a generic claim, but a Markush claim. (MPEP 2173.05(h)(1)). Use of "or" as the format for a Markush claim is permissible (MPEP 2173.05(h)(2)).

The problem with this restriction is that it is not in accordance with the requirements of MPEP 803.02 Restriction - Markush Claims, PRACTICE RE MARKUSH TYPE CLAIMS: "If the members of the Markush group are sufficiently few in number...the Examiner must examine all the members of the Markush group in the claim on the merits.

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even though they are directed to independent and distinct inventions." Here the number is two and so it could not be any fewer than it is. Only "If the Markush-type claim is not allowable over the prior art, examination will be limited to the Markush-type claim and claims to the elected species" and in that case only will "claims drawn to species patentably distinct from the elected species" be "held withdrawn from further consideration."

The restriction is improper for the foregoing reasons, and for the further reason that claim 1 is generic to claims 2-7. Furthermore, it is hard to say that "the search required for group I is not required for group II and vice versa" as alleged. MPEP 802.02 states "Where it is necessary to search for one of the distinct subjects in places where no pertinent art to the other subject exists, a different field of search is shown even though the two are classifiable together."

The election of group II is confirmed and the restriction requirement is traversed for all of the foregoing reasons. Withdrawal of the restriction requirement and examination of claim 7 on its merits is hereby respectfully requested.

4. There is no information that is not cumulative to that already of record in the case.

5,6. Claims 1-6 are rejected as anticipated by JP2002-324562 (JP). The rejection alleges "an electric storage device 2 connected in series to a DC/DC converter 33 and connected between the output lines to the load 34 (Fig. 7 as applied to claim 1)." However, that is neither what claim 1 requires nor what Fig. 7 of JP shows. Claim 1, as relating to a DC/DC converter, requires a "storage device...connected to a DC/DC converter, said DC/DC converter and said electric energy storage device being connected in series between said electric output power lines." Clearly, in Fig. 7 of JP, the DC/DC converter is across the power lines and the storage device is outboard of the DC/DC converter. There is no anticipation.

With respect to claim 4, there is absolutely no indication in JP that the voltage to the storage device is either a multiple or a fraction of the voltage between the output lines to load 34. In fact, the contrary is true. The acronym "SOC" means "state of charge". Wherever "charging rate" appears, "level of charge" should be understood. What is referred to is doubling the voltage-current (V-I) property of the battery and the voltage-

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current property of the fuel cell stack. What this means, in electrical engineering, is if they are both connected to the load then the dip in voltage as a function of the current draw will only be half as great as it would be if only one of them were connected to the load. Scientifically, it cannot mean anything else. In paragraph 0012, the voltage-current property of the fuel cell stack and the battery are "fitted" by adjusting the output voltage of the DC/DC converter according to the state of charge of the battery. Furthermore, in paragraph 0015 it is stated that the voltage-current property of the fuel cell stack and the battery is "fitted by forming DC to DC converter on the battery side". It also says that a capacitor voltage-current property will be "fitted to the voltage current property of the fuel cell stack using a DC to DC converter". Thus, they will be matched together, and when both are supplying the load, the voltage droop with load will be half of what it would be with either one alone.

Thus, JP does not provide a voltage which is either substantially a multiple or substantially a fraction of the voltage between the fuel cell stack electric output power lines.

In addition, claim 4 requires that the voltage provided to the storage device be controlled in response to a voltage-related to the load. This is not disclosed in JP. Instead, the voltage provided to the storage device is "fitted by adjusting the output voltage of DC to DC converter 33 according to the (sic) level of charge (SOC) of the rechargeable battery detected by the SOC sensor 38". Stated alternatively, the voltage provided to the storage device in JP is determined by the voltage-current property of the fuel cell stack and the storage device. The voltage is therefore adjusted to the fuel cell stack, and not to the load as in claim 4.

JP does not anticipate claim 4 for the foregoing reasons. Claim 5 is also not anticipated by JP for the reasons set forth hereinbefore with respect to claim 4.

With respect to claim 6, JP does not disclose that the DC/DC converter doubles the voltage to the device 2, as alleged. It states in paragraph 0014 that "in order to double the V-I property of the rechargeable battery 2 which changes according to a charging rate...and the V-I property of the fuel cell stack 1, DC to DC converter 33 was used conventionally." Thus, JP alleges doubling the voltage-current property of the battery and the fuel cell stack by means of the DC to DC converter. JP does not disclose doubling the

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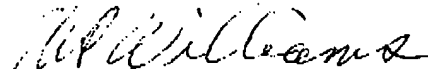
voltage. Further, as described in paragraphs 0012 and 0015, the V-I properties of the stack and the storage device are "fitted" using the DC converter. This can only mean "matched" in this context, which is the antithesis of multiples and fractions.

For all the foregoing reasons, reconsideration and allowance of claims 1-6 over JP is respectfully requested.

7. It is agreed that the other references are less pertinent than that discussed in detail hereinbefore.

Should the foregoing not be persuasive in any respect, a telephone call is earnestly solicited.

Respectfully submitted,



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